DOCUMENT RESUME

ED 450 075 SP 039 694

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TITLE	Protecting Teens: Beyond Race, Income and Family Structure.
INSTITUTION	Minnesota Univ., Minneapolis. Center for Adolescent Health.
SPONS AGENCY	Robert Wood Johnson Foundation, Princeton, NJ.
PUB DATE	2000-11-00
NOTE	41p.; Based on data from "The Effects of Race/Ethnicity Income and Family Structure on Adolescent Risk Behaviors" by R. W. Blum, T. Beuhring, M. L. Shew, L. H. Bearing, R. E. Sieving, and M. D. Resnick. "American Journal of Public Health," December 2000.
AVAILABLE FROM	Add Health, Center for Adolescent Health, University of Minnesota, 200 Oak Street S.E., Suite 260, Minneapolis, MN 55455-2002; e-mail: aph@umn.edu.
PUB TYPE	Reports - Evaluative (142)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Adolescents; Drinking; Family Influence; *Health Behavior; Peer Influence; Public Health; Racial Differences; Secondary Education; Secondary School Students; Sexuality; Smoking; Socioeconomic Status; Substance Abuse; Suicide; Violence; Weapons
IDENTIFIERS	*Risk Reduction; *Risk Taking Behavior

ABSTRACT

This monograph discusses how to protect adolescents by addressing health behaviors. Data come from the Add Health Survey, a comprehensive school-based study of adolescents' health-related behaviors. Secondary students answered surveys about their lives, health, friendships, self-esteem, and expectations for the future. School administrators completed surveys about school policies and procedures, teacher characteristics, health service provisions, and student characteristics. Students and parents completed interviews. Section 1 discusses resulting data on interrelationships among race, income, and family structure. Section 2 examines individual factors and friends and family influence on teen behavior. Both sections highlight cigarette use, alcohol use, suicidal thoughts and attempts, weapon-related violence, and sexual intercourse. While demographic factors influence behavior, they do not cause teens to engage in high risk behavior. It is necessary to move away from a focus on demographic factors in trying to understand adolescent health risk behaviors. Other factors are powerfully associated with exacerbating or minimizing risks to youth, and many are amenable to change. For example, being at academic risk was nearly universally associated with every health risk behavior studied. Friends and parents powerfully influenced teens' lives. When parents and families were involved, young people benefited. (SM)

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Protecting Teens:

Beyond Race, Income and Family Structure

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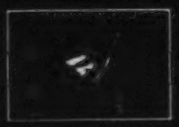
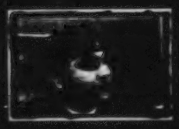
Teenage drinking *and tobacco usage, involvement in violence, early and unprotected sex, and certainly, suicidal thoughts and attempts can lead to early*  *death as well as health problems later in life. What factors are associated with*  *increased or decreased risks within each racial/ethnic group? Are these factors the same across ethnic groups and gender? Are there unique factors* *that increase the risk in some groups but not others? Preliminary answers to* *these questions are the focus of this report.*

Protecting Teens:

Beyond Race, Income and Family Structure

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Preparation of this report was assisted by a grant from the Robert Wood Johnson Foundation Princeton, New Jersey

Introduction

There are many things that influence the health *of an adolescent. Race, ethnicity, income and family structure, for example, represent contexts* *affecting the attitudes, beliefs and behaviors of youth that belong to the group. This influence is seen in the consistent differences between groups in the prevalence of adolescent* *drinking, smoking, violence, suicide risk, and sexual activity.*

It is, however, important to note that there are large numbers of youth in every "high-risk group" who do not engage in problem behaviors. Likewise, in groups viewed as "low-risk," a significant number of youths participate in the same health compromising behaviors. What factors are associated with more or less involvement with health compromising behaviors within demographic groups? Are some factors the same regardless of race or gender? Are there unique factors that increase or decrease risk in some groups but not others? How might the answers to these questions help shape policy and interventions to promote the health and well being of all youth in the United States?

Whether it is tobacco use or violence, pregnancy rates or suicide, analysis after analysis has led policy makers to believe that an adolescent's race, income, family structure, and gender predict the

likelihood of a teen participating in risky behaviors. Perhaps unintentionally, reports on the prevalence of risk behaviors are often interpreted as suggesting a direct relationship between individuals' behavior and his or her ethnicity, income, or family structure. Because such an approach is often misleading, the American Academy of Pediatrics recently recommended that child health analyses go beyond demographic descriptions to identify the underlying social mechanisms that account for poor health and health-risk behaviors.

How important is it to address health risk behaviors within low-risk groups as well as high-risk groups? What is it within each group that is associated with increased or decreased risk behavior? Do the same risk and protective factors apply to all youth, regardless of gender or ethnicity? Are there unique factors for some groups? This monograph reports on these issues in greater depth.

Understanding Risk and Protective Factors

Risk factors are those aspects of the teen's life that are associated with an increased likelihood of substance use, early sex, violence, and other behaviors that threaten his or her health and well-being. Protective factors are those aspects of the teen's life that are associated with a reduced risk of engaging in problem behaviors. Risk and protective factors are often mirror images of each other (for

THE NATIONAL LONGITUDINAL STUDY OF ADOLESCENT HEALTH (ADD HEALTH)

The Add Health Survey, from which this data comes, is a comprehensive school-based study of the health-related behaviors of adolescents in the United States. Add Health surveys were conducted in two phases. In the first phase, some 90,000 students in grades 7 through 12 attending 134 schools across the United States answered brief questionnaires about their lives, including their health, friendship, self-esteem, and expectations for the future. Before students could participate, parents had to give their permission through procedures approved by each school.

In the first year of the study, administrators from the participating schools also completed a questionnaire dealing with school policies and procedures, teacher characteristics, health service provisions or referrals, as well as student body characteristics. In the spring of 1996, school information was updated in a telephone interview.

In the second phase, with the written consent of both the parent and the adolescent, over 20,000 in-home interviews of students were conducted between April and December of 1995 (Wave I). This "in-home" sample is composed of both a nationally representative core sample (approximately 12,000) and a dozen special samples that could be used to examine questions for groups that would otherwise be too small for analysis (for example, twins, Cuban Hispanics, and disabled youth). No paper questionnaires were used. Instead, all data were recorded on laptop computers with sensitive questions asked privately using a pre-recorded audiocassette. A follow-up in-home interview (Wave II) of 15,000 adolescents was conducted between April and August of 1996.

A parent of each adolescent who was interviewed at home, usually the mother, was asked to complete an interview as part of Wave I. Eighteen thousand parent interviews were completed.

An additional survey, Phase Three, is planned for 2001. At that time, the entire original sample group will be interviewed once again.

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Data Used in this Report

- Almost 11,000 White, Black and Hispanic youth from a nationally representative sample;
- Add Health Wave 1 data (1995-6) based on in-home interviews with teenagers and their parents.

example, low self-esteem is a risk factor while high self-esteem is protective). They may be causal or merely "red flags" indicating that a youth is at higher or lower risk for specific problems. Research indicates that the relationship is often complex. For example, while teens may choose friends who do what they like to do, they are also influenced by their friends' behavior and vice versa. Whether we view them as"red flags", causal or some of both, understanding risk and protective factors can help us in improving the lives of youth by identifying where we might intervene.

WHO IS INCLUDED? WHO IS NOT?

Analyses are based on the nationally representative "core sample" of teens and their parents interviewed at their homes. It is precisely because the survey is so representative of teens across the United States that, despite its size, some of the numbers are small. For example, Native Americans represent 1.2% of the population, and they represent 1.2% of the Add Health teen sample, so only 120 Native American youth actually participated in the study – too small a number to be analyzed separately. The same is true for other ethnic minorities as well. The sample is so small for certain populations that there is a risk of generalizing to a whole group across the country based on only a handful of young people. Thus, we have limited our analyses to Black, Hispanic and White youth. While there are a number of special populations available for analysis in a larger Add Health sample, we choose not to use them because of difficulties of generalizability.

Race and Ethnicity

Teens were asked about their racial/ethnic identities in three ways. They could select one or more racial groups — such as White or Black — to which they belonged. If they said they were from two or more groups, for example, White and Black, they were then asked with which group they primarily identified. A separate question inquired whether they were Hispanic. Based on these responses, teens were then assigned to one of three major racial/ethnic categories: White (non-Hispanic), Hispanic (any race), and Black (non-Hispanic). Due to insufficient numbers in the nationally representative sample, youth in other racial/ethnic groups were not included in these analyses.

Over two thirds (71.1%) of the final sample identified themselves as White (non-Hispanic); 12.6% identified themselves as Hispanic and 16.3% said they were Black.

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Income

Annual household income was defined as all sources of money, including public assistance, and was based on parent reports. Income ranges were divided into six categories:

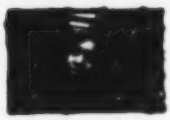
- **$10,000 or less (9.0%)**
- **$11,000 to $20,000 (13.4%)**
- **$21,000 to $30,000 (33.6%)**
- **$31,000 to $40,000 (26.8%)**
- **$41,000 to $60,000 (9.5%)**
- **$61,000 or more (7.6%)**

This report used the six-category measure of income in all analyses because it was easier to make an accurate estimate where data were missing. The results were the same as when a continuous measure of income was used.

Family Structure

Just under one-third (31.1%) of students reported that they had one resident parent, while over two thirds (68.9%) reported living in two-parent families. Although youth living in intact two-parent families are at lower risk than youth living in step, adoptive, or foster two-parent families, this report clusters all two-parent families together. (When we ran the data separating two parent biologic families from others, we saw no significant differences from how we analyzed the data initially).

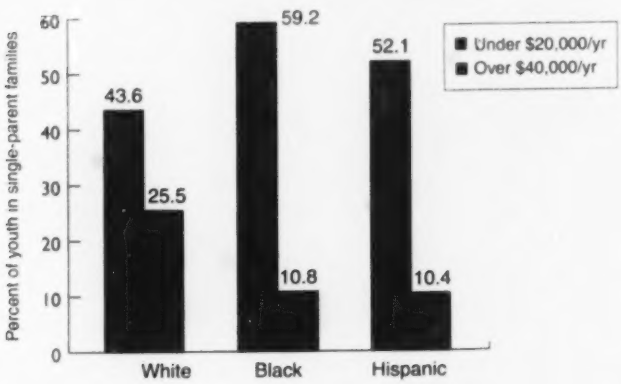
Interrelationships Among Race, Income and Family Structure

There is a high degree of interrelationship among  *race, income and family structure.*

For instance, while nearly two thirds (65.2%) of adolescents in the lowest income group came from single-parent families, only 6.4% of those in the upper income group came from single-parent homes. If you live in a single-parent home, you are much more likely to be poor. Likewise, children of color from single-parent families are much more likely to be poor than their white counterparts.

Income and race are also closely related: four out of five youths in upper income groups were white, while more than half of those with incomes under $20,000 were teens of color.

Intercorrelation of Income & Family Structure



Risk Behaviors

We explored the relationships between four key demographic factors (race, income, family structure and gender). We then selected five adolescent health-risk behaviors that represent some of the major threats to adolescent health and well-being.

Analyses throughout this report were conducted using the following measures. All but sexual intercourse reflected increasing degrees of involvement in risky health behaviors.

- **cigarette use (12 levels);**
- **alcohol use (6 levels);**
- **suicide risk (5 levels);**
- **violence involving weapons (8 levels) and**
- **sexual intercourse (yes/no);**

To simplify the presentation of the findings in the first section of the report, the health risk behaviors were divided into two categories for each, as described in the "cut-points" box. Income was combined into three categories for the same reason.

- **White teens were more at risk for smoking and drinking, regardless of gender.**
- **Black and Hispanic teens were more at risk for weapon-related violence, although the differences were much smaller among males than females.**

"Cut-Points" of Teen Risk Behaviors used in the Descriptive Analyses*

- ***Smoking:*** **smoked one or more cigarettes in the past 30 days;**
- ***Alcohol use:*** **drank any alcohol in the past 12 months;**
- ***Suicide risk: any*** **suicide thoughts or attempts in the past 12 months;**
- ***Weapon-related Violence: any*** **weapon-use, weapon carrying, or any incident where a weapon was used;**
- ***Sexual intercourse: ever*** **had intercourse.**

* These outcome behaviors are treated as continuous or quasicontinuous measures in the second part of the report.

Measuring Health and Behaviors

Cigarette Use

Twelve levels of use defined by a combination of items on frequency and number of cigarettes smoked: Never tried; experimental smoker; former occasional or regular smoker; former daily; occasional; transitional; light regular; moderate regular; heavy regular; light daily smoker; moderate daily smoker; heavy daily smoker.

Alcohol Use

A single item on frequency of use: none in the past year; 1-2 days in the past year; 3-12 days in the past year; 2-3 days in the past month; 1-2 days in the past week; 3+ days in the past week.

Suicidal Thoughts and Attempts

Five levels of thought or attempt in the past year as defined by a combination of items: no suicidal thoughts or attempts; thoughts; one attempt in the past year; two attempts; three or more attempts.

Weapon-Related Violence

A scale of 13 items measuring the number of incidents of weapon use, weapon carrying, and/or involvement in incidents where they or someone else was injured by a weapon (alpha reliability=.83). Items were selected based on review of the literature and a factor analysis of 26 items involving delinquent behavior, fighting, weapon use, weapon carrying and injury by a weapon.

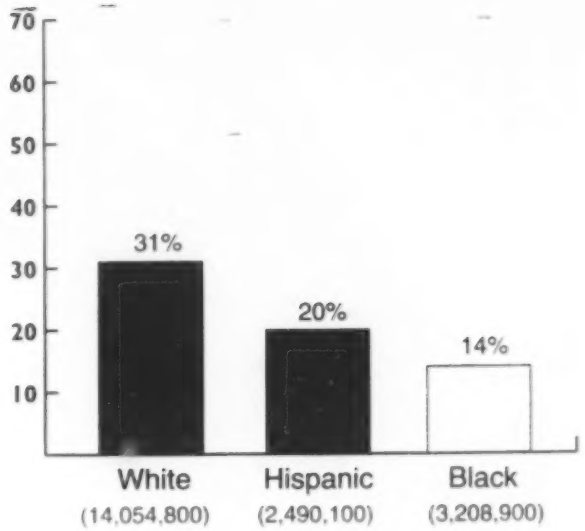
Sexual Intercourse

One question: Ever had vaginal intercourse.

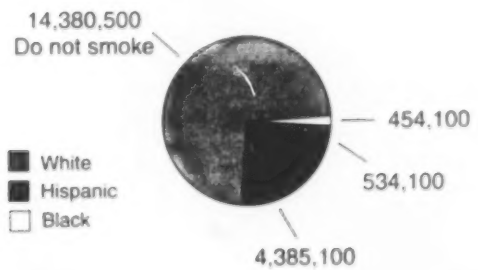
Prevalence of Problem Behaviors

The prevalence of every health risk behavior varied to some degree, depending on race/ethnicity. Overall:

Percent of Teens Who Smoke



Number of Teens Who Smoke *
(N = 19,753,800)



* Based on the percent of youth in the sample applied to national adolescent census data.

- **Black teens were the most likely to have had sexual intercourse.**
- **White and Hispanic teens were more likely than Black youth to report suicidal thoughts and attempts.**

The following analyses looked at the unique relationship of each demographic variable to the health risk behaviors after controlling for the influence of the others (for example, the relationship of race to smoking after controlling for the effects of income, family structure and gender).

Cigarette Use

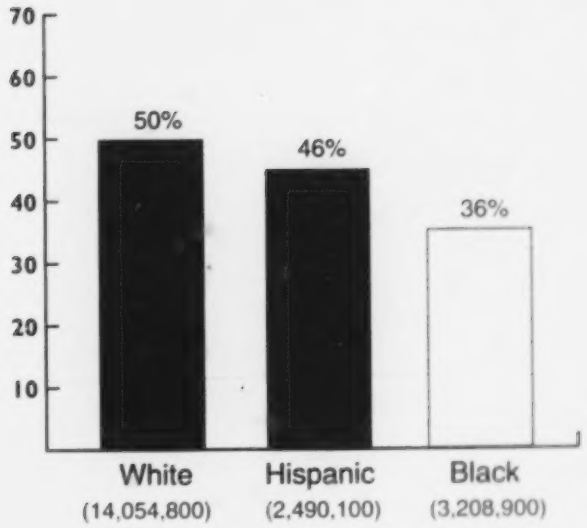
Over half (55%) of the 7th to 12th graders in the study said they had *never* smoked a full cigarette. One quarter of the sample (27%), representing 5.4 million American teenagers, reported having smoked in the past 30 days. The remaining youth (18%) were former smokers. The prevalence of smoking nearly doubled between middle school and high school, rising from 19% in the 7th-8th grade to 37% in the 11th-12th grade.

- White youth smoked more than Black or Hispanic teens;
- Youth from wealthier families smoked less than youth from poorer families regardless of race, gender, or family structure;
- Teens from single parent homes were at increased risk for smoking regardless of grade, income or gender.
- There were no gender differences in cigarette smoking at either younger or older grades.

Alcohol Use

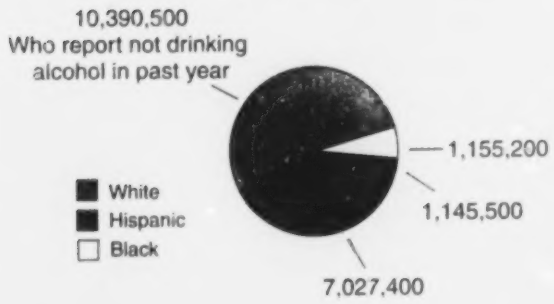
Only half (53%) of the 7th to 12th grade youth reported that they had not had a glass of beer, wine, or liquor in the past year. Over one-quarter of the sample (29%), representing 5.8 million youth nationwide, said they drank between once a year and once a month. Another 8%, representing 1.6 million youth, drank 2-3 days per month. The final 10%, representing 2.0 million youth, drank weekly. The prevalence of alcohol use more than doubled between

Percent of Teens Who Drink Alcohol



Number of U.S. Teens Who Drink Alcohol *

(N = 19,753,800)



* Based on the percent of youth in the sample applied to national adolescent census data.

middle school and high school, from 28% in the 7th-8th grade to 63% in the 11th-12th grade.

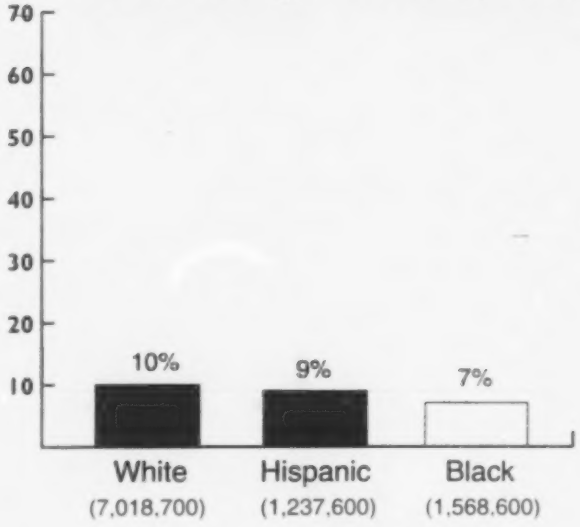
- White youth use alcohol more than Hispanic youth and much more than Black youth, regardless of gender;
- Black teens reported drinking less than either White or Hispanic youth. Among 9-12th graders, Hispanic teens reported drinking less than White youth as well. This finding challenges previous findings that Hispanic youth are at especially high risk for alcohol abuse.
- Among 9th to 12th graders, youth from wealthier families reported more drinking than their lower income-peers.
- Teens in single parent families were more likely to drink than those in two-parent families.
- Older adolescent females use alcohol less frequently than same age boys. There were no gender differences in drinking among younger teens.

Suicidal Thoughts and Attempts

Overall, 12.6% of the adolescents, representing 2.5 million youth in school nationwide, reported suicidal thoughts or attempts in the past year. Approximately one third (0.7 million), indicated that they had already made at least one recent attempt. The percentage of youth reporting suicidal thoughts or attempts was relatively stable across grades, income levels, and family structure but varied with gender and race/ethnicity. Females were at greater risk than males (16% versus 9%), while White and Hispanic youth were at somewhat greater risk than Black youth (9% versus 7%).

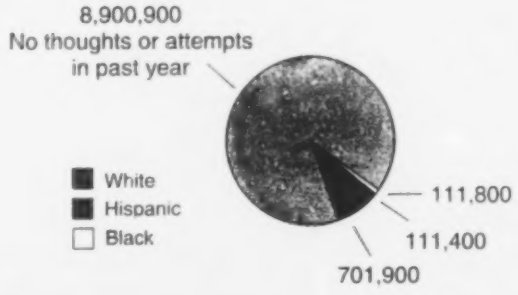
- White and Hispanic youth were more likely than Black youth to report suicidal thoughts and attempts in all grades.
- Among 9th to 12th graders, suicidal thoughts and attempts were slightly less common among wealthier youth.
- Among 9th to 12th graders, suicidal thoughts and attempts were more common among youth from single-parent families.

Percent of Male Teens Who Have Suicidal Thoughts or Attempt Suicide



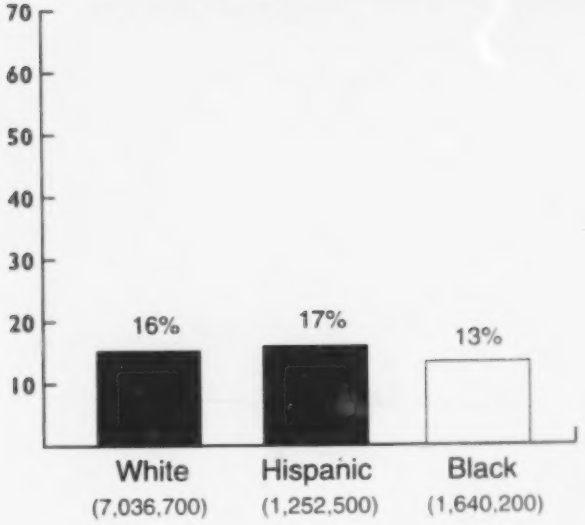
Number of U.S. Male Teens Who Have Suicidal Thoughts or Attempts *

(N = 9,824,900)



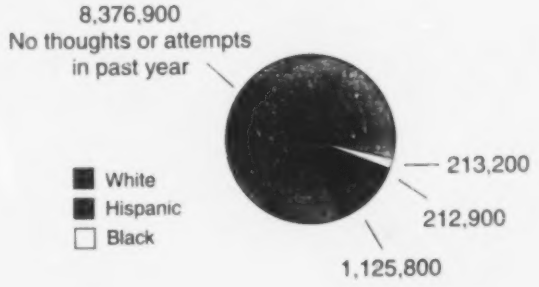
* Based on the percent of youth in the sample applied to national adolescent census data.

Percent of Female Teens Who Have Suicidal Thoughts or Attempt Suicide



Number of U.S. Female Teens Who Report Suicidal Thoughts or Attempts *

(N = 9,928,800)



* Based on the percent of youth in the sample applied to national adolescent census data.

- Females were more likely than males to report suicidal thoughts and attempts in every grade.

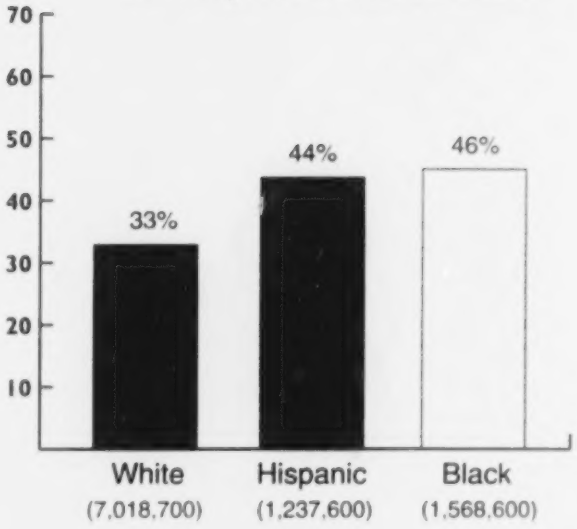
Weapon-Related Violence

Weapon-related violence —defined as using a weapon, carrying a weapon, or being in an incident where someone was injured by a weapon in the past year—

may be far more common among American youth than previously suspected. Overall, 26% of the sample, representing 5.3 million students nationwide, reported being involved in weapon-related violence. Among those with any involvement in weapon-related violence (one or more incidents), fully 35% (representing 1.8 million students), said they had used a weapon to threaten or hurt someone in the past year. This proportion rose to 55% (1.3 million students) among those who were involved in three or more violent incidents and to 78% (0.7 million students) among those who were involved in six or more violent incidents. The prevalence of weapon-related violence was surprisingly stable across grades 7 through 12 (24% to 29%).

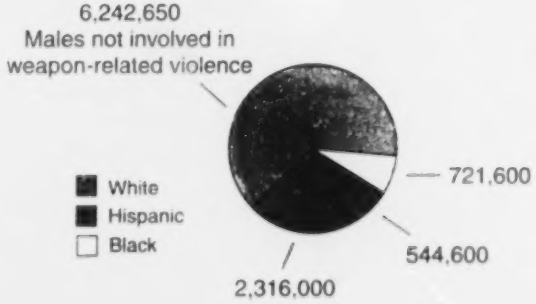
- **Black and Hispanic youth were more likely than White youth to report involvement in weapon-related violence — independent of income, family structure or gender.**
- **Youth from wealthier families were less likely to be involved in weapon-related violence than their lower income peers — independent of race, family structure, or gender.**

Percentage of Teenage Males Involved in Weapon-Related Violence



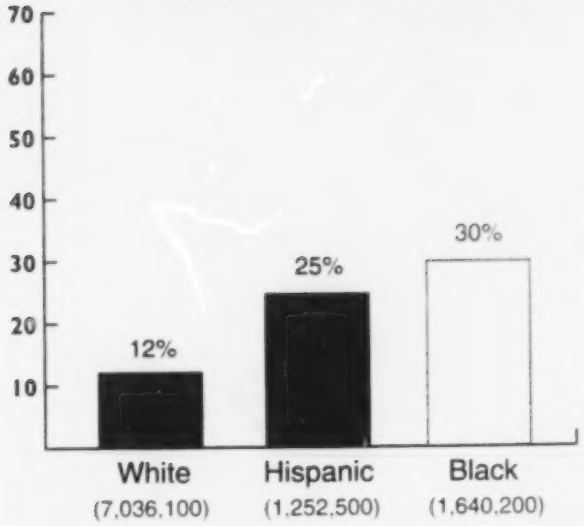
Number of U.S. Male Teens Involved in Weapon-Related Violence *

(N = 9,824,900)



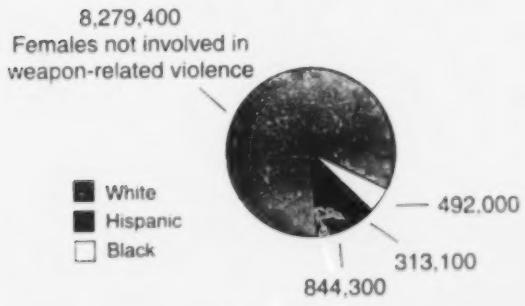
* Based on the percent of youth in the sample applied to national adolescent census data.

Percentage of Teenage Females Involved in Weapon-Related Violence



Number of U.S. Female Teens Involved in Weapon-Related Violence *

(N = 9,928,800)



* Based on the percent of youth in the sample applied to national adolescent census data.

- Youth in single-parent families were more likely to be involved in weapon-related violence than youth in two-parent families — independent of race, family structure, or gender.
- Males were more likely than females to be involved in weapon-related violence — regardless of race, income, or family structure.

Sexual Intercourse

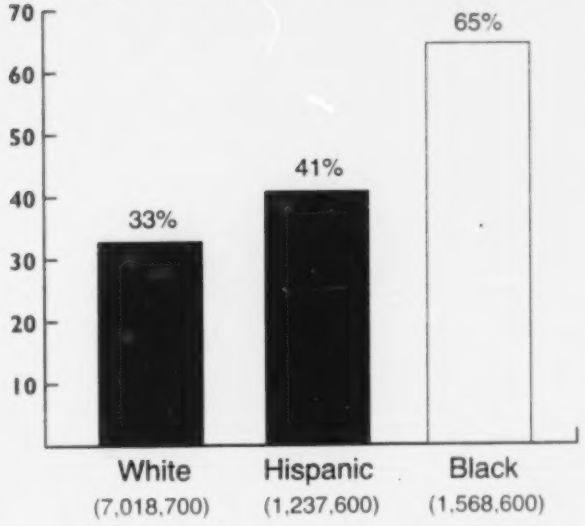
Reports of ever having had sexual intercourse increased dramatically with grade, from 16% among 7th to 8th graders to 60% among 11th to 12th graders, with a corresponding rise in risks of pregnancy and sexually transmitted diseases like AIDS and hepatitis.

- Black youth were more likely to have had intercourse than White or Hispanic youth.
- Those from wealthier families were less likely to have had intercourse than those from lower-income families.
- Youth in single-parent families were more likely to have had intercourse than youth in two-parent families.
- Among 7th and 8th graders, females were less likely to have had intercourse than males.

What Does It Mean?

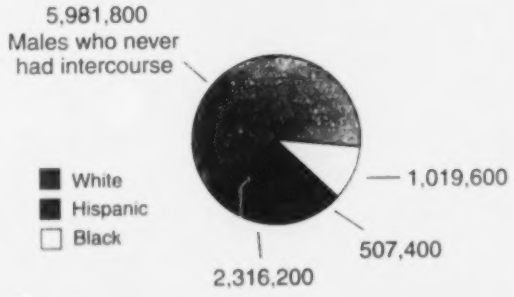
While some adolescent health-risk behaviors appear to be disproportionately prevalent among Black and Hispanic youth, lower income adolescents, and

Percentage of Teenage Males Who Have Ever Had Sexual Intercourse



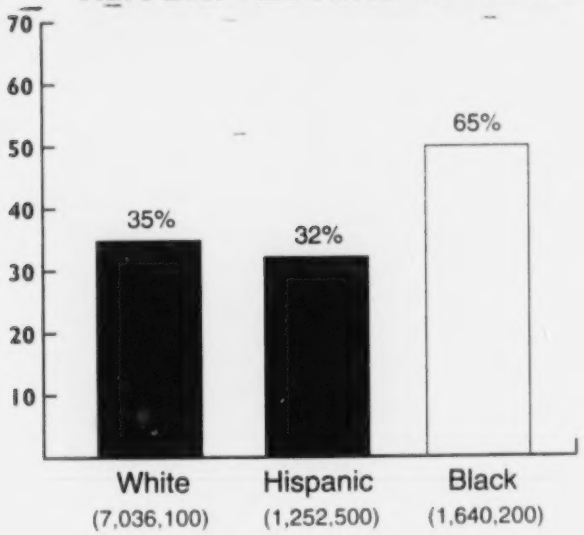
Number of U.S. Male Teens Who Have Ever Had Sexual Intercourse *

(N = 9,824,900)

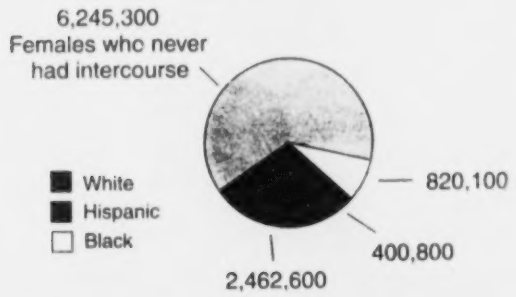


* Based on the percent of youth in the sample applied to national adolescent census data.

Percentage of Teenage Females Who Have Ever Had Sexual Intercourse



Number of U.S. Female Teens Who Have Ever Had Sexual Intercourse *
(N = 9,928,800)



* Based on the percent of youth in the sample applied to national adolescent census data.

youth living in single-parent families, other behaviors, such as substance use, are higher among upper income White youth. No matter what the association, it is unwise to conclude that if we know these things about an adolescent we can, with any degree of accuracy, predict his or her health-risk behavior.

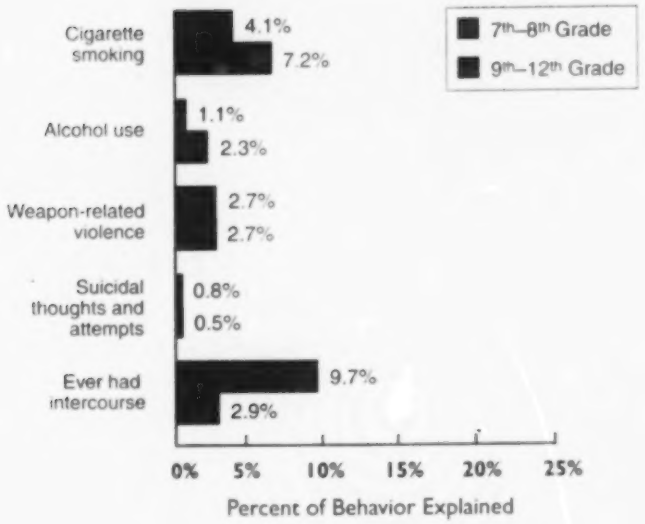
How much does knowing an individual's race/ethnicity, income, and family structure together help us explain that the individual will likely participate in adolescent health-risk behaviors? A measure called R^2 (the square of the correlation between a health-risk behavior and a set of predictors) provides a model by which to proceed. It indicates what percentage of the individual differences regarding involvement in a health-risk behavior (ranging from none to a lot) can be explained by knowing other things about that individual. In this case, regardless of gender, we want to see the joint effect of knowing a youth's race/ethnicity, family structure, and income.

- **Cigarette Smoking: Only 4.1% of the individual differences in the amount of cigarette use among younger and 7.2% of the differences in amount of smoking among**

older teens can be explained merely by knowing the youth's race/ethnicity, income, and family structure.

- Drinking: The same three demographic variables explained only 1.1% of the individual differences in frequency of alcohol use among younger teens and 2.3% of the individual differences among older youth.
- Suicidal thoughts and attempts: Less than 0.5% of the individual differences in degree of suicide risk could be explained by race/ethnicity, income, and family structure in either grade group.
- Violence: Only 2.7% of the individual differences in the level of involvement in weapon-related violence could be explained from the same demographic variables considered together.
- Ever had sex: An analogue of R^2 for logistic regression (which is used for dichotomous "yes/no" rather than continuous measures) indicated that race/ethnicity, income, and family structure explained only 9.7% of the individual differences as to whether a younger teen had ever had sexual intercourse, and 2.9% of the individual differences in sexual intercourse among older teens.

Differences in Health-Risk Behavior Explained By Race/Ethnicity, Income and Family Structure



Thus, while the cultural contexts of race/ethnicity, family structure, and income help shape behavior, knowing these factors is insufficient to accurately target interventions or policies. Other influences in the lives of teens are important to our understanding and effectively addressing adolescent health-risk behaviors.

Understanding Individual Differences within Groups

If race/ethnicity, income, and family structure are weak explanations for youth health-risk behaviors, then what might help us better to understand the factors that contribute to some youth participating in risk behaviors while others avoid them?

What is Beyond Race, Income, and Family Structure?

Teen smoking, drinking, weapon-related violence, suicide attempts and unprotected sex are among the major public health concerns in the United States today. Perhaps one of the factors that has made it difficult to address these problems has been the focus on

group differences and the belief that targeting policies and programs towards the "highest risk" groups is the primary solution.

The findings presented in the first part of this report suggest that such an approach, especially when based on demographics, cannot solve the larger public health problem. While it is important to continue to direct resources and programs to groups where rates of health-risk behavior are high, it is equally important to remember that, in absolute numbers, the majority of health-risk behaviors occur among populations who, according to demographics, would be considered low-risk.

How else might we identify vulnerable youth? Are there key risk and protective factors that generalize across racial/ethnic groups vis-a-vis risk behaviors? Are certain risk behaviors unique to one or another group? Answering these questions present implications for developing policies and programs that would meet the needs of American teens. The second part of this report focuses on these questions.

Individual Factors, Friends and Family Influence the Behavior of Teens

Theories of *adolescent development and health-risk behavior provide the framework for this report.*

METHODS

Sample. The same nationally representative samples of White (non-Hispanic), Black (non-Hispanic) and Hispanic youth were used in the first section, but divided by gender instead of grade. Since sample size affected the sensitivity of the analyses, the White sample was randomly divided into four sub-samples that were similar in size to the other groups. Only results that were significant in at least three of the four White subsamples are reported in tables on pages 23-33. This helps ensure that comparisons among racial/ethnic groups are not biased by differences in statistical sensitivity and that very weak effects are not given undue importance.

Risk and protective factors. Based upon the ecological model and problem behavior theory, over 50 potential risk and protective factors derived from the youth and parent surveys were screened; those that had a simple association of $r > .10$ with any risk behavior in any gender/ethnic group were retained for testing in the models described below. Where possible, risk and protective factors were defined by more than one survey item in order to improve the validity and stability with which the underlying constructs were measured.

An ecological systems model views the adolescent as developing within the context of family, peers, school, community, and culture. The closer the context is to the teenager, the more directly it influences his or her health-related attitudes and behavior. Linkages within and across contexts play an important role, since community and cultural contexts often influence behavior indirectly through their impact on peer and family norms. Links exist between the health-risk behaviors as well, according to Problem Behavior Theory. For example, the extent to which an adolescent tends to violate social norms as a way of establishing individuality is seen as the underlying motivation for behaviors as diverse as substance use, delinquency, and early sex.

A large body of research provides general support for these theoretical perspectives. What is less clear is whether these influences are expressed in similar ways within various groups. The substantial gender and racial/ethnic differences in the prevalence of health-risk behaviors, for example, suggest that risk and protective factors may differ among culturally distinct groups. Alternatively, the risk and protective factors may be the same but simply occur more often, or accumulate to a greater degree, in some groups than others.

The unusually large sample and broad scope of the Add Health survey makes it possible to examine relationships separately by gender for the three racial/ethnic groups described earlier, using measures collected at the same time and defined in identical ways for each group. Interactions among individual, peer and family factors were also tested as well, since

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resiliency theory suggest that the joint occurrence of risk and protective factors may increase or reduce risk to a greater degree than either factor operating alone. Although such interactions, or "enhanced effects," are an integral part of the theoretical frameworks cited above, they have not been widely studied in practice. This study therefore provides new evidence of how important these "enhanced effects" may be in understanding adolescent health-risk behavior.

Cigarette Use

Considered jointly, the risk and protective factors shown on page 25 explained 31% to 42% of individual differences in the extent of smoking among males and 24% to 49% of individual differences in the extent of smoking among females.

The most cross-cutting risk and protective factors, regardless of gender or race/ethnicity, were:

- **Frequent problems with school work;**
- **Frequency of "just hanging out" with friends each week;**
- **Number of best friends who smoke daily.**

ANALYTIC APPROACH

Models of association. Multiple or logistic regression was used to select a set of risk and protective factors that, taken together, did the best job of reproducing individual scores on the risk behavior in question. These models are often called "prediction models" even though in this case they were based on a snapshot of data collected at one point in time. A hierarchical stepwise method was used to select the optimal set of factors. After entering the control variables, blocks of factors were forced into the model in a pre-determined order based on their theoretical closeness to the adolescent's attitudes and behavior: individual-level, peer, and then family. Within each block, statistical criteria determined which specific factors would be retained, if any.

The multiple correlation coefficient (R) provided a measure of the strength of association between each health risk behavior and the final set of statistically selected factors. When squared (R^2), the multiple correlation indicates how well a set of risk and protective factors, considered jointly, reproduces individual scores on the measure of health risk behavior. Although not without its drawbacks, R^2 provides a single measure for comparing how well the models developed for each group do at explaining individual differences about the extent to which youth engaged in the health risk behavior. Since this study was actually a snapshot of associations taken at one point in time, however, the results should be viewed as preliminary. Additional research is needed to determine the usefulness of these models for predicting behavior at a later point in time, as is research that attempts to determine which factors are causes and which are merely markers of risk. The reader should also keep in mind that the R^2 for each domain (individual, peer, family) was influenced somewhat by the number of variables and order of domains in the analyses, although changing the order did not materially alter the conclusions presented in this report.

Depending on the group, the effect of having best friends who smoke was enhanced when self-esteem was low, if there was a smoker at home, or if the teenager hangs out a lot with friends.

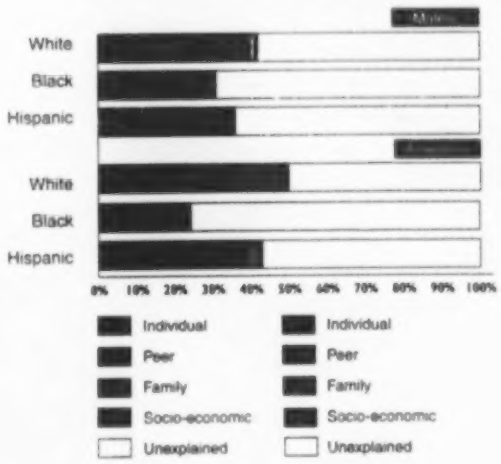
Females: A history of rape or sexual abuse (defined as intercourse before the age of 12) was associated with increased cigarette use among females, regardless of race/ethnicity.

Minority Males: Frequently attending youth groups or services at church, high self-esteem, and expectations of attending college were protective against smoking for minority males, while greater self-assessed physical maturity was associated with increased risk.

Black Youth: A positive relationship with parents and family was uniquely protective against smoking among Black youth.

The strength and consistency of peer influences on smoking is upheld by other research, although the relationship is known to be complex. Youth both pick friends who do what they want to do, and are influenced by those friends' behaviors. In this analysis, the influence of having friends who smoked was enhanced by risk factors in other domains. This suggests that the association may be at least partly due to the influence of friends.

How much knowing individual, peer, family and socio-economic factors help explain which teens are likely to smoke (R^2)



Factors Associated with Cigarette Smoking[1]

▲ = Risk ● = Protective

	Males			Females		
	White[2]	Black	Hispanic	White[2]	Black	Hispanic
Individual Level						
Frequent problems with school work	▲	▲	▲	▲	▲	▲
Frequently just hangs out with friends	▲	▲	▲	▲	▲[3]	▲[3]
Frequenty religious activities		●	●			
Frequency of hobbies					●	
Work 20 hrs/wk during school*	▲					
Degree of physical maturity		▲	▲			▲
Rape/sexual abuse history*		▲		▲	▲	▲
Youth has bad temper*		▲			▲	▲
Degree of self-esteem		●	●			
Wants & expects to attend college		●	●			
Peer Context						
Number of best friends who smoke	▲[4]	▲[5,6]	▲[6]	▲[4]	▲[5]	▲[4,5]
Prejudice among students at school					▲	
Family Context						
Smoker in the home*	▲[3]	▲		▲[3]		▲[3]
Teen sets his/her own curfew*					▲	
Positive parent/family relationship						

* A dichotomous (yes/no) variable. History of rape was asked only of females. History of sexual abuse was defined as first intercourse before age 12.

[1] The following risk and protective factors were not associated with amount of smoking in any gender/ethnic subgroup: ever repeated a grade; physical recreation; extent of religious beliefs; belief that successes were earned; family member suicide or attempt; presence of extended family in the home (youth; adult); whether Spanish was primary language at home (Hispanic); parent present at dinner; parent presence after school; number of siblings; extent of joint parent-youth decision making.

[2] The following risk and protective factors were treated as non-significant for Whites in the table because they were not consistently related to smoking among White youth when their sample size was matched to the Hispanic and Black sample sizes: religious activities; hobbies; physical maturity; temper; history of sexual abuse; belief that successes were earned; parent-family relationship; parent-presence at dinner; number of siblings; friend suicide or attempt.

[3] Risk enhanced by friends smoking.

[4] Risk enhanced if there is a smoker in the home.

[5] Risk enhanced by just hanging out.

[6] Risk enhanced by low self-esteem.

Alcohol Use

Considered jointly, the risk and protective factors shown in the Table on page 27 explained 35% to 44 % of individual differences in the frequency of drinking among males and 28% to 43% of individual differences in the frequency of drinking among females.

The most important risk factors, regardless of gender or race/ethnicity, were:

- **Frequent problems with school work, and**
- **Number of best friends who drink at least monthly.**

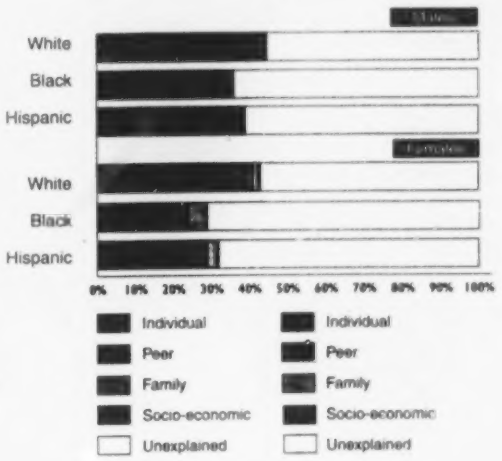
Depending on the group, the effect of having best friends who drink was enhanced by having parents who drink frequently or by adolescent reports of frequently just hanging out with friends.

Males: The frequency with which males "just hang out" with friends was associated with increased alcohol use in every racial/ethnic group. For White and Black males, the frequency of hanging out also increased the risk associated with having best friends who drink.

Minority Youth: Greater self-assessed physical maturity was associated with frequency of alcohol use among Black and Hispanic males and females, while the number of siblings at home was associated with reduced risk for minority females.

As with smoking, the strength and consistency of peer influences on drinking is reflected in prior research. In this analysis, the influence of having friends who drink was enhanced by risk factors in other domains. This suggests that the association may be at least partly due to peer influences.

How much knowing individual, peer, family and socio-economic factors help explain which teens are likely to drink alcohol (R^2)



Factors Associated with Alcohol Use[1]

▲ = Risk ● = Protective

	Males			Females		
	White[2]	Black	Hispanic	White[2]	Black	Hispanic
Individual Level						
Frequent problems with school work	▲		▲	▲	▲	▲
Frequently just hangs out with friends	▲[3]	▲[3]	▲	▲[3]		
Frequency of hobbies				●	●	
Work 20 hrs/wk during school*						▲
Degree of physical maturity		▲	▲		▲	▲
Rape/sexual abuse history*					▲	
Youth has bad temper*						▲
Peer Context						
Number of best friends who drink	▲[3]	▲	▲	▲[4,5]	▲	▲
Friend suicide or attempt*					▲	
Family Context						
Frequency of parent drinking				▲[4]	▲	
Frequency parent present at dinner					●	
Positive parent/family relationships		●			●	
Extent of joint decision-making						●
Number of siblings					●	●

* A dichotomous (yes/no) variable. History of rape was asked only of females.

[1] The following risk and protective factors were not associated with drinking in any gender/ethnic subgroup: ever repeated a grade; physical recreation; wants and expects to attend college; frequency of religious activities; belief that successes were earned; self-esteem; extent of religious beliefs; family member suicide of attempt; presence of extended family in the home (youth; adult); whether Spanish was the primary language at home (Hispanic); extent of prejudice at school; youth sets his/her curfew; frequency of parent presence after school.

[2] The following risk and protective factors were listed as non-significant for whites in the table because they were not consistently related to drinking among White youth when their sample size was matched to the Hispanic and Black sample sizes: frequency of religious activities; physical maturity; history of rape (females); parent-family relationship; parent presence after school.

[3] Risk enhanced by friends drinking.

[4] Risk enhanced by parents drinking.

[5] Risk enhanced by just hanging out with friends.

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Weapon-related Violence Table

Considered jointly, the risk and protective factors shown in the table on page 29 explained 20% to 31% of individual differences in the extent of violence reported by males and 12% to 25% of individual differences in the extent of violence reported by females.

The most important risk and protective factors, cutting across gender and ethnic groups were:

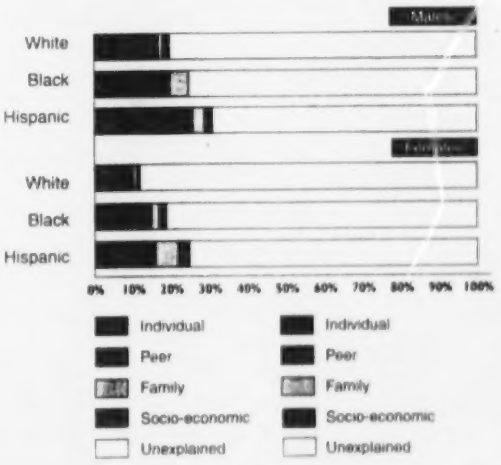
- **Frequent problems with school work;**
- **Number of best friends who drink;**
- **Friend's suicide or attempt *(except among Black males)*;**
- **Degree of positive parent and family relationship *(except among White females).***

In contrast to substance use, there was only scattered evidence of enhanced effects due to other factors. Surprisingly, easy access to a gun at home was not consistently related to the degree of involvement in weapon-related violence. It was a specific risk factor for White and Black males and Black females.

Males: Frequency of "just hanging out with friends" was associated with increased involvement in weapon-related violence among males, regardless of race/ethnicity.

Minority Males: In addition to the above, degree of self-assessed physical maturity, having repeated a grade, and a

How much knowing individual, peer, family and socio-economic factors help explain which teens are likely be involved in weapon-related violence (R^2)



family member's suicide or attempt were all associated with an increased involvement in weapon-related violence among Black and Hispanic males.

Among Black males, according to parental report, those who have a bad temper have more reported weapon-related violence.

Factors Associated with Weapon-Related Violence[1] ▲ = Risk ↄ = Protective

	Males			Females		
	White[2]	Black	Hispanic	White[2]	Black	Hispanic
Individual Level						
Frequent problems with school work	▲	▲	▲	▲	▲	▲
Frequently just hangs out with friends	▲[3]	▲	▲		▲[3]	
Degree of physical maturity		▲	▲			▲
Rape/sexual abuse history*			▲		▲	
Youth has bad temper*		▲[4]			▲	
Wants & expects to attend college		●				●
Ever repeated a grade*			▲		▲	
Peer Context						
Number of best friends who drink	▲[5]	▲	▲	▲	▲[5]	▲
Friend suicide or attempt*					▲	
Family Context						
Positive parent/family relationships	●	●	●		●	●
Joint decision-making		●[6]			●	
Family member suicide or attempt*		▲	▲			▲
Extended family in the home (adults)*			●			▲
Extended family in the home (youth)*			▲			
Frequency parent presence at dinner		●				
Easy access to guns at home*	▲	▲			▲	

* A dichotomous (yes/no) variable. History of rape was asked only of females.

[1] The following risk and protective factors were not associated with extent of weapon-related violence in any gender/ethnic subgroup: work 20+ hours/week; frequency of hobbies; frequency of religious activities; extent of religious beliefs; belief that successes were earned; self-esteem; frequency of parent presence after school; sets own curfew; extent of prejudice at school; number of siblings; whether Spanish was the primary language at home (Hispanic).

[2] The following risk and protective factors were listed as non-significant for Whites in the table because they were not consistently related to violence among White youth when their sample size was matched to the Hispanic and Black sample sizes: college plans; physical recreation (a risk); physical maturity; history of rape/sexual abuse; self-esteem; family member suicide or attempt; joint decision-making; sets own curfew.

[3] Risk enhanced by friends drinking.

[4] Risk enhanced by low joint decision-making.

[5] Risk enhanced by just hanging out with friends.

[6] Protection enhanced if no bad temper.

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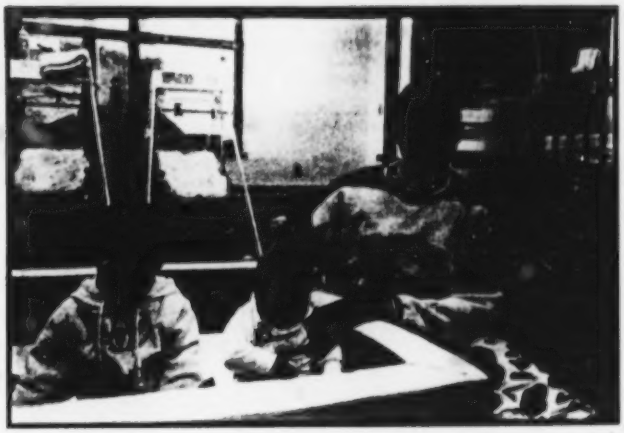
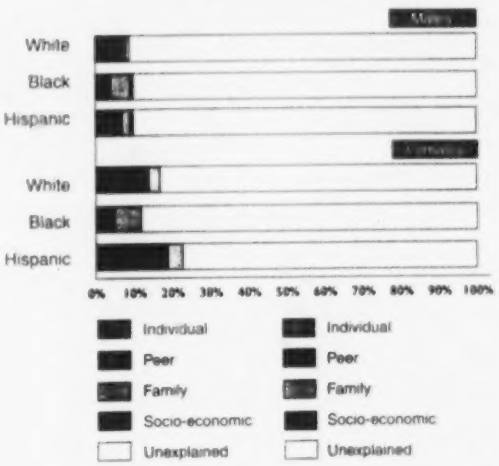


Minority Females: Percentages of students' involved in weapon-related violence were surprisingly high among Black and Hispanic females – 30% and 25% respectively. Most of the risk and protective factors found among Black males applied to Black females as well. Frequency of "just hanging out", having repeated a grade, having a bad temper, and a history of rape, further increased their risk. However, there was no such pattern for Hispanic females. Self-assessed physical maturity, expectations of attending college, and whether or not there were adult extended family members at home were associated with their degree of involvement in violence.

The findings reported here are unique in two respects. First, they are limited to violence involving weapons. Most previous research has included fighting in the measure of violence because reports of using a weapon are rare. However, fighting is relatively common, especially among early and middle adolescents. It declines with grade as adolescents mature; fighting is not nearly as great a threat to adolescent health as violence involving a weapon. So this study used a more sensitive index of violence that included reports of carrying a weapon and seeing someone injured or being injured by a weapon — all of which are associated with increased weapon use by youth *(See Measuring Health and Behavior on page 2)*

How much knowing individual, peer, family and socio-economic factors help explain which teens are likely to have suicidal thoughts or attempt suicide (R^2)



Secondly, this is perhaps the first report using a nationally representative sample that reports the rates weapon-related violence among females; thus it is the first comparison of correlates of weapon-related violence among females from different racial/ethnic groups.

Suicidal Thoughts and Attempts

Considered jointly, the risk and protective factors shown in table on page 31 explained 9% to 10% of individual differences in extents of suicide risk among males and 12% to 23% of individual differences in extents of suicide risk among females.

Factors Associated with Suicidal Thoughts and Attempts[1] ▲ = Risk ● = Protective

	Males			Females		
	White[2]	Black	Hispanic	White[2]	Black	Hispanic
Individual Level						
Frequent problems with school work	▲		▲	▲		▲
Degree of self-esteem	●					
Degree of physical maturity						▲
Rape/sexual abuse history*						▲
Extent of religious beliefs						●
Peer Context						
Friend suicide or attempt*		▲	▲	▲	▲	▲
Number of best friends who drink			▲[3]	▲	▲	▲
Family Context						
Frequency of parent drinking			▲[4]			
Positive parent/family relationships		●		●	●	●
Extended family in the home (youth)		●				●

* A dichotomous (yes/no) variable. History of rape was asked only of females.

[1] The following risk and protective factors were not associated with extent of suicide risk in any gender/ethnic subgroup: ever repeated a grade; college plans; working 20+ hours/week; frequency of hanging out; hobbies; religious activities; physical recreation; bad temper; belief that successes were earned; extent of prejudice at school; easy access to a gun at home; youth sets own curfew; frequency of parent at dinner; frequency of parent presence after school; joint parent-youth decision making; extended family in the home (adult); whether Spanish was the primary language at home (Hispanic).

[2] The following risk and protective factors were listed as non-significant for Whites in the table because they were not consistently related to suicide risk among White youth when their sample size was matched to the Hispanic and Black sample sizes: physical recreation; physical maturity; history of rape; religious belief; frequency of just hanging out; self-esteem; parent presence after school; family member suicide or attempt; joint decision-making; temper.

[3] Risk enhanced by parent drinking.

[4] Risk enhanced by friends drinking.

The most important risk factor, regardless of gender or race/ethnicity, was:

- **Friend suicide completion or attempt.**

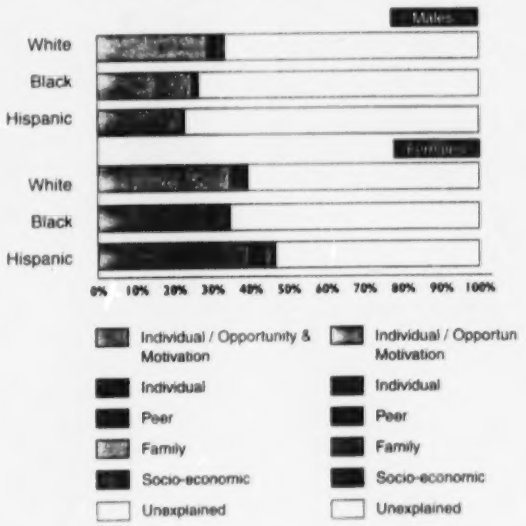
Frequent problems with schoolwork further increased risk among White and Hispanic youth. A positive parent-family relationship was protective among females, regardless of race/ethnicity.

The sparseness of significant risk and protective factors is consistent with the fact that the major risk factors for suicide are related to personality, social skills and genetic factors that could not be measured and/or analyzed in the present report. The fact that there is only a limited overlap with identified risk and protective factors for weapon-related violence points to the need for caution when drawing comparisons between self-directed and weapon-related forms of violence directed at others. Furthermore, the weak association observed between measures of suicide risk and weapon-related violence (r = .18 to .22 for all groups except Black males where r = .10) should be a cautionary note about equating suicidal thoughts and attempts with weapon-related violence. While there are some shared risk factors, including problems with school, friend's suicide or attempt, and the parent/family relationship, there are a number of factors that are distinct beetween the two.

Sexual Intercourse

Considered jointly, the risk and protective factors shown in the table on page 33 explained 25% to 34% of the individual differences among males regarding whether they had ever engaged in sexual intercourse and 35% to 49% of the individual differences among females.

How much knowing individual, peer, family, socio-economic factors and individual opportunity & motivation for sexual activity help explain which teens are likely to have sexual intercourse (R^2)



Factors Associated with Whether or Not Youth Had Sexual Intercourse[1]

▲ = Risk ○ = Protective

	Males			Females		
	White[2]	Black	Hispanic	White[2]	Black	Hispanic
Individual Sexual Experience						
Opportunity						
Ever dated*					▲	
Ever kissed or necked*	▲	▲	▲			▲
Romantic relationship in 18 months before survey*	▲	▲	▲[5/6]	▲	▲	▲[5]
Motivation						
Made public or written virginity pledge*		○	○	○	○	
Perceived personal & social *benefits* to sex	▲[7]	▲[8]	▲[9]	▲		▲[9]
Perceived personal and social *costs* to sex	○	○[10]	○[10]	○		○[11]
Perceived costs of get/make someone pregnant	○[12]	○[12]		○[12]	○[12]	○[12]
Perceived (not actual) knowledge of birth control[3]	▲	▲		▲	▲	▲
Individual						
Ever repeated a grade*			▲[9]			
Frequent problems with school work						▲
Wants & expects to attend college		○		○		
Religious beliefs						○[13]
Physical maturity						▲
Peer Context						
Number of best friends who drink				▲	▲	
Prejudice among teens at school						▲
Family Context						
Parents disapprove of youth having sex at this time in their life					○	○
Positive parent/family relationships					○	
Number of siblings					○	

* A dichotomous (yes/no) variable. History of rape was asked only of females.

[1] The following risk and protective factors were not associated with ever had intercourse in any gender/ethnic subgroup: whether would keep child if got pregnant; frequency of religious activities; or physical recreation; youth has bad temper; believes successes were earned; self-esteem; parent presence after school; parent presence at dinner; sets own curfew; frequency parent drinking; family member suicide or attempt; joint decision-making; whether Spanish was the primary language at home (Hispanic).

[2] The following risk and protective factors were listed as non-significant for Whites in the table because they were not consistently related to ever had intercourse among White youth when their sample size was matched to the Hispanic and Black sample sizes: ever dated; virginity pledge; ever repeated a grade; hobbies; college plans; parent-family relationship; extended family in the home (adults); friend suicide or attempt; number of best friends who drink; worked 20+ hours/week.

[3] Extent of perceived knowledge of birth control was only weakly related to extent of *actual* knowledge regardless of grade or sexual experience.

[4] Type "analogue of R[2]" explanation from section I as a footnote here or combine with "*" comment instead, if possible.

[5] Risk enhanced if see benefit to sex.

[6] Risk enhanced if repeated a year.

[7] Risk enhanced if feels knowledgable about birth control.

[8] Risk enhanced if sees few social costs.

[9] Risk enhanced if had a romantic relationship.

[10] Protection enhanced if sees risk of pregnancy.

[11] Protection enhanced if strong religious belief.

[12] Protection enhanced if good school attendance.

[13] Protection enhanced if see many social costs.

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The most important risk factor, regardless of gender or race/ethnicity, was:

- **Having been in a romantic relationship in the prior 18 months.**

Two factors were related to sexual behavior among White and Black males and among Hispanic and Black females:

- **Perceived benefits and perceived costs of having sex (except Black females);**
- **Perceived personal and social costs of getting/making someone pregnant (except Hispanic males);**
- **Perceived (not actual) degree of knowledge about birth control (expect Hispanic males).**

Males: Ever having kissed or necked, the extent of perceived personal and social costs as well as the perceived personal and social benefits of having sex were risk or protective factors for males in all three racial/ethnic groups

Minority Males: Having made a public or written virginity pledge was associated with not having had intercourse. No such association was found among White males.

Minority Females: The adolescent's perception of parents' strong disapproval of her having sex at this time in her life was associated with the Black and Hispanic females reporting of not having sexual intercourse. No such association was found among White females.

Black Females: Having made a virginity pledge, having a larger number of siblings,

and the extent of positive parent/family relationships, were associated with reporting not having had sexual intercourse. Reporting ever having dated and having a large number of friends who drink were associated with having sexual intercourse for Black females.

Hispanic Females: Ever having kissed or necked, perceived costs and perceived benefits of having sexual intercourse were risk or protective factors, as were problems with school work, degree of self-assessed physical maturity, and extent to which other students at school were thought to be prejudiced.

The analyses provide extensive evidence of enhanced effects among risk and protective factors within the domain of individual factors specific to sex, and suggest that the decision to have sexual intercourse may be heavily influenced by both opportunity and the perceived trade offs between costs and benefits. It is consistent with the fact that sexual intercourse is a normative behavior which we merely seek to delay rather than prevent.

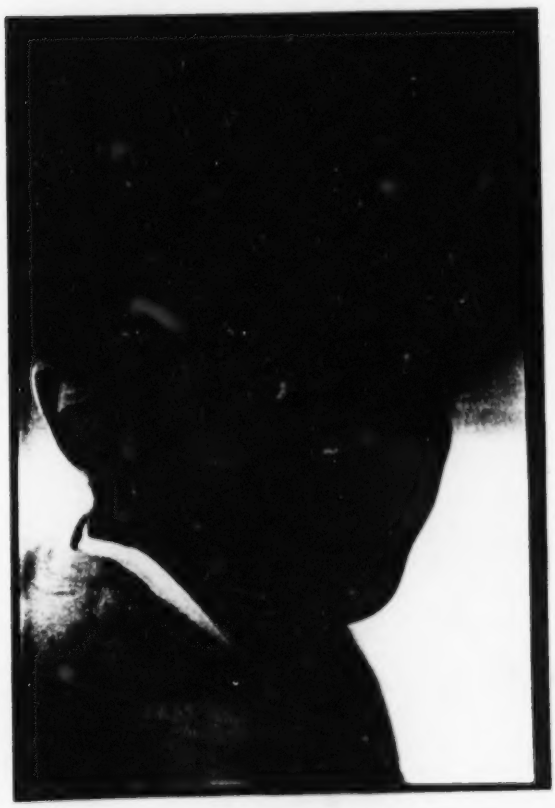
Two other findings were noteworthy. First, the variables we analyzed were predictive of sexual intercourse among

Black males as well as for other ethnic groups and for females. What differentiates the present study from many others was the large number of individual-level variables specifically related to sexual intercourse. Secondly, a surprisingly large percentage of individual differences in sexual experience was explained in every gender/ethnic group in this study, and nearly all of the explanatory power was attributable to individual-level factors specific to sex. General factors that were found to predict other health risk behaviors did not seem to make nearly as much difference when it came to sex.

Summary

When we examine the factors, events and experiences that apply across gender, most ethnic groups and health risk behaviors, the following risk and protective factors stand out:

1. Youth who have problems with schoolwork are more likely than others to experience or be involved with every health risk studied. This is evident, with very little exception, across the groups studied. School failure is a public health problem.
2. Teens who spend a lot of time "just hanging out" with friends, especially friends involved with a specific risk behavior, are more likely to be involved themselves. Clearly, one's choice of friends matters. There may also be health consequences to substantial amounts of unstructured leisure time.
3. Friends' drinking behavior is strongly associated with not only teen drinking, but weapon-related violence, and, in some groups, with suicidal thoughts and attempts. Whether this is just a "red flag" or is directly related is unclear. In the present study there was no measure of friends' involvement with violence.
4. No protective factor cut across all health-risk behaviors. However, the one most consistently protective factor found was the presence of a positive parent-family relationship.



Conclusion

Race, ethnic, and cultural affiliations, family *structure and income are* *all contexts within which young people live.*

And while these factors influence behavior they do not cause a young person to engage in a high-risk behavior. If our goal is to improve outcomes for young people and reduce risk, we must move away from our focus on these demographic factors and abandon them as useful ways of understanding adolescent health risk behaviors. We have seen that they are weak predictors of adolescent behavior. Additionally, they are distal, indirect influences on young peoples' lives, and do not directly control those factors that have a greater determinative influence on what young people do. Finally, they are not especially amenable to change.

What this report has also shown, however, is that there are a number of factors that are powerfully associated with exacerbating or minimizing risks to young people. Many of these are amenable to change. Being at academic risk was nearly universally associated with every health risk behavior we studied. We need to understand that health and education are closely intertwined and that school failure needs to be viewed as a health as well as an education crisis.

Friends have a powerful influence on the lives of young people; they in turn influence their friends. Parents need to be involved with their teens' friends—know who they are — attend to what they do, and supervise the amount of time their children spend "hanging out" with their friends.

Frequently we see that when young people are close to their parents and family they are less likely to report involvement with health-risk behaviors. Parents need both the skills and support to develop and maintain close, caring relationships and connect with their children as they progress though teenage years.

When parents and family are involved in the lives of their teenagers, young people benefit. When they are involved in their teenagers' schooling, young people benefit. And when parents and family are involved with their teenagers' friends, they benefit, regardless of whether they are White, Black or Hispanic, male or female.

In a society with high rates of divorce and separation and where work demands increasingly encroach on parent and family availability, this report stands as a warning and a promise. The warning is that when parents are not personally and psychologically available for their teenage children, teenagers pay a high price. When we as a society do not support parents to be effective as well as available, teenagers suffer. On the other hand, this report also indicates that, in the final analysis, it matters less if an adolescent comes from a single or dual parent family than what happens within the family. When we nurture the capacity of parents and of families to be involved in the lives of their teenage children, young people are the beneficiaries.

Acknowledgements

The authors wish to thank the Robert Wood Johnson Foundation for its support of the analysis and production of this report. Deep appreciation goes to Chris Bachrach, PhD, Michael Resnick, PhD, and Clea McNely, DrPH for their careful reading and thoughtful critiques of previous drafts. In the final analysis, however, the authors are responsible for what is reported. We are grateful to Jonathon Chanetsa who provided detailed copy-editing. A very special debt of gratitude goes to Linda Boche who tirelessly revised the tables, figures and text too many times to count. Additionally, we wish to acknowledge the commitment and efforts of Elizabeth Latts, MSW and and Melissa Bishop for identifying the network and compiling the mailing lists that comprise the first mailing of this report. Finally, we wish to thank the 18 federal agencies lead by the National Institute of Child Health and Human Development that had the vision to support the development of the National Longitudinal Study of Adolescent Health. It is to the young people of the United States from all ethnic groups, all religions, all different types of families, and all income levels that this report is dedicated with the hope that what is presented will help those committed to working with young people so that all young people will benefit.

This monograph was prepared by Trisha Beuhring, PhD, Robert Wm. Blum, MD, MPH, PhD, and Peggy Mann Rinehart of the Center for Adolescent Health, University of Minnesota. It is based on an analysis of Add Health data and reported in the *American Journal of Public Health*, December, 2000:

Blum, R.W., Beuhring, T., Shew, M.L., Bearing, L.H., Sieving, R.E., & Resnick, M.D. (2000) The effects of race/ethnicity, income and family structure on adolescent risk behaviors. *American Journal of Public Health*, 90(12).

Additional copies (up to 3) of this monograph can be obtained by contacting:

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Citation Information:
Blum, R.W., Beuhring, T., Rinehart, P.M., (2000).
Protecting teens: Beyond race, income and family structure. Center For Adolescent Health, University of Minnesota, 200 Oak Street SE, Suite 260, Minneapolis, MN.

Preparation of this report
was assisted by a grant from
The Robert Wood Johnson Foundation,
Princeton, New Jersey

Printed by University of Minnesota Printing Services

Print Production Assistance: Shawn Welch and Sysouk Khambounmy,
University of Minnesota Printing Services